Pricing Matrix – Limiter Switches
Solicitation N00164-04-R-8715

Note: Annotate pricing below.

Year 1		
CLIN	**Minimum Quantity**	**Proposed Unit Price**
0001	500	

	Year 2		Year 3		Year 4		Year 5	
CLIN	**Quantity**	**Proposed Unit Price**	**Quantity**	**Proposed Unit Price**	**Quantity**	**Proposed Unit Price**	**Quantity**	**Proposed Unit Price**
0001	50-100		50-100		50-100		50-100	
	101-250		101-250		101-250		101-250	
	251-500		251-500		251-500		251-500	
	501-1000		501-1000		501-1000		501-1000	
	1001-1500		1001-1500		1001-1500		1001-1500	

Note: Year 2 will in effect beginning 365 days after contract award and ending 730 days after contract award.

Year 3 will be in effect beginning 730 days after contract award and ending 1,095 days after contract award.

Year 4 will be in effect beginning 1,095 days after contract award and ending 1,460 days after contract award.

Year 5 will be in effect beginning 1,460 days after contract award and ending 1,825 days after contract award.

ALTERNATE PROPOSALS

Offerors shall provide pricing for the quantities above. Alternate proposals will be accepted by the Government and may be in an abbreviated form following the same section format as above, with alternate quantity price breaks. The Government reserves the right to accept prices that are determined to be the most advantageous to the Government.

If alternate proposals are submitted, such alternatives will be clearly labeled and identified on the cover page of each separate document. The reason for each alternate and its comparative benefits shall be explained.

ON DISK

APPLICATION		REVISIONS			
NEXT ASSY	USED ON	LTR	DESCRIPTION	DATE	APPROVED
928307 SEE ENGRG RECORDS	AN/SLQ-32(V)	AD	REVISED PER CEO XC16748V jcs	88-11-11	[illegible]
		AE	REVISED PER CEO XC17187V lc	91-01-02	[illegible]
		AF	REVISED PER CEO XC17208V lv	91-01-02	[illegible]
		AG	REVISED PER CEO XC17629V lc	91-01-02	[illegible]
		AH	REVISED PER CEO XC17679V lc	91-01-02	[illegible]
		AJ	REVISED PER CEO CS00068V lc	91-01-02	[illegible]
		AK	REVISED PER CEO XC18373V lc	951025	[illegible]
		AL	REVISED PER NOR HF01281V lc	951025	[illegible]
		AM	REVISED IAW NOR 80740886	030114	[illegible]
		AN	REVISED IAW NOR 80740936R1 NEW SHEET ADDED	040121	LB

ON DISK

CAUTION
ELECTROSTATIC DISCHARGE SENSITIVE

REV STATUS OF SHEETS																			
	REV LTR	A	AJ	V	N	N	AJ	AB	AB	AB	AG	AG	AG	AK	AJ	AG	AL	AN	AN
	SHEET NO.	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

REV STATUS OF SHEETS															
	REV LTR	AN	AJ	AB	AC	AN	A	A	U	A	A	A	G	AN	SOURCE CONTROL DRAWING
	SHEET NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES: ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

CONTR NO. N00039-77-C-0132
DR
CHK [signature] 22 AUG 77
APPD [signature] 18 AUG 77
[signature] 8/22/77
[signature] 8/22/77
APPROVED
BY DIRECTION OF

RAYTHEON
RAYTHEON COMPANY
LEXINGTON, MASS. 02173

DRAWING TITLE
LIMITER-SWITCH

SIZE	CODE IDENT NO.	DRAWING NO.
A	49956	929050
SCALE NONE		SHEET 1 OF 31

10-2735 (6/72) FILM PRINTED IN U.S.A.

SH

DWG NO.

QTY REQD	DOCUMENT NUMBER	NOMENCLATURE	ITEM NO.
SEE 10.2		PARTS LIST (APPLICABLE DOCUMENTS)	
REF	DOD-HDBK-263	ESD CONTROL HDBK FOR PROTECTION OF ELEK AND ELEC PARTS, ASSYS, EQPT.	17
REF	MIL-STD-1686	ESD CONTROL PROGRAM FOR PROTECTION OF ELEK AND ELEC PARTS, ASSYS, EQPT.	16
REF	DOD-STD-1686	ESD CONTROL PROGRAM FOR PROTECTION OF ELEK AND ELEC PARTS, ASSYS, EQPT.	15
REF	NAVMAT P-9492 NO REVISION	NAVY MANUFACTURING SCREENING PROGRAM	14
REF	MIL-STD-454H	STANDARD GENERAL REQUIREMENTS FOR ELECTRONIC EQUIPMENT	13
REF	MIL-P-55110C	PRINTED WIRING BOARDS	12
REF	574908	DTP FREQUENCY CODES (CONFIDENTIAL)	11
REF	MIL-STD-1285	MARKING OF ELEC AND ELEK PARTS	10
REF	MIL-STD-831	TEST REPORTS, PREPARATION OF	9
REF	MIL-STD-810	ENVIRONMENTAL TEST METHODS	8
REF	MIL-STD-461	EM-INTF CHARACTERISTICS, REQT FOR EQPT	7
REF	MIL-STD-202	TEST METHODS FOR ELEK AND ELEC CMPNT PARTS	6
REF	MIL-STD-100	ENGINEERING DRAWING PRACTICES	5
REF	MIL-C-39012	CONNECTORS, COAX, RF GENL SPEC FOR	4
REF	MIL-S-19500	SEMICONDUCTOR DEVICES, GENL SPEC FOR	3
REF	MIL-E-17555	ELEK AND ELEC EQPT, PKG AND PKG OF	2
REF	MIL-E-16400	ELEK EQPT, NAV SHIP AND SHORE, GENL SPEC FOR	1

Raytheon Company
Lexington MA 02173

DR.	SIZE A	CAGE CODE 49956	DRAWING NO. 929050	REV AJ
CHK.	SCALE		SHEET 2	

SH

DWG NO.

NOTES:

1. GENERAL REQUIREMENTS

1.1 THIS SPECIFICATION DEFINES THE REQUIREMENTS FOR A SERIES OF SOLID-STATE, LOW POWER MICROWAVE LIMITER-SWITCH ASSEMBLIES FOR USE IN A SHIPBOARD ENVIRONMENT.

2. APPLICABLE DOCUMENTS

2.1 LIST OF REFERENCED DOCUMENTS. THE DOCUMENTS LISTED IN THE PARTS LIST ARE A PART OF THIS DOCUMENT TO THE EXTENT SPECIFIED.

2.2 ISSUE OF DOCUMENTS. IF THE ISSUE OF THE DOCUMENT IS NOT SPECIFIED IN THE PARTS LIST, THE ISSUE IN EFFECT ON THE DATE OF INVITATION FOR BIDS, OR REQUEST FOR PROPOSAL, SHALL APPLLY.

2.3 PRECEDENCE OF DOCUMENTS. IN THE EVENT OF CONFLICT BETWEEN THE REQUIREMENTS OF THE REFERENCED DOCUMENTS AND THE REQUIREMENTS OF THIS DOCUMENT, THE REQUIREMENTS OF THIS DOCUMENT SHALL APPLY.

3. ELECTRICAL REQUIREMENTS

3.1 THE ASSEMBLY SHALL MEET ALL PERFORMANCE REQUIREMENTS THROUGHOUT THE FREQUENCY RANGE SPECIFIED IN TABLE I. CODED FREQUENCY DESIGNATIONS ARE DEFINED IN RAYTHEON ESD DRAWING 574908.

3.2 WITH A LOGIC "0" VOLTAGE LEVEL APPLIED TO THE CONTROL INPUT ("ON" CONDITION), THE INSERTION LOSS OF EACH ASSEMBLY SHALL BE WITHIN THE LIMITS INDICATED IN FIGURES 1, 2, 3, AND 4, FOR ITEMS 929050-1, -2, -3, AND -4, RESPECTIVELY. THESE LIMITS APPLY THROUGHOUT THE SIGNAL DYNAMIC RANGE UP TO 4 dB BELOW THE 1 dB COMPRESSION POINT AND AT ALL OPERATING ENVIRONMENTAL CONDITIONS SPECIFIED HEREIN (TABLE IV) EXCEPT AS OTHERWISE INDICATED IN NOTE 5.3.

TABLE I - PERFORMANCE REQUIREMENTS

REF NOTE	CHARACTERISTIC	929050-1	929050-2	929050-3	929050-4
3.1	FREQUENCY RANGE	F_c TO F_e	F_c TO F_e	F_e TO F_k	F_e TO F_k
3.2	INSERTION LOSS, dB	FIG. 1	FIG. 2	FIG. 3	FIG. 4
3.4	ISOLATION, J1 TO J2, dB (MIN)	55	55	60	60
3.5	VSWR (MAX) "ON" CONDITION (INPUT & OUTPUT)	2.0:1	1.75:1	2.0 :1	1.8:1
3.6	"OFF" CONDITION (INPUT PORT	2.2:1	2.2:1	2.2:1	2.2:1
3.7	OUTPUT 1 dB COMPRESSION POINT, dBm, (MIN)	+7.5	+7.5	+7.5	+7.5
3.8	HARD LIMITING, dBm (MAX)	+20	+20	+23	+23
3.3	SPIKE LEAKAGE:				
3.9	ENERGY, ERG (MAX)	0.1	0.1	0.1	0.1
	PULSE WIDTH, nS (MAX)	100	100	100	100
3.10	INPUT RF POWER HANDLING CAPABILITY CW POWER, dBm (MIN)	+30	+30	+30	+30
	PEAK POWER WITH 5 uS PULSE WIDTH, 1% DUTY CYCLE, dBm (MIN)	+50	+50	+50	+50

SIZE A | CODE IDENT NO. 49956 | DRAWING NO 929050 | REV AC | SCALE | SHEET 4

TABLE I - PERFORMANCE REQUIREMENTS (CONTINUE)

REF NOTE	CHARACTERISTIC	929050-1	929050-2	929050-3	929050-4
3.11.1	TURN-ON DELAY, t_{ON},nSEC	11.5 ± 8.5	11.5 ± 8.5	11.5 ± 8.5	11.5 ± 8.5
3.11.2	TURN-OFF DELAY, t_{OFF},nSEC (MAX)	200	200	200	200
3.11.3	RF RISE TIME, t_r, nSEC (MAX)	15	15	15	15
3.11.3	RF FALL TIME, t_f,nSEC (MAX)	50	50	50	50
3.15	FOR 929050-1 &-2: SPURIOUS OUTPUTS, mV PEAK (MAX) MEASURED WITH A CVR AND A FILTER. SEE FIGURE 9. FOR 929050-3 & -4: SPURIOUS OUTPUTS, mV PEAK (MAX) MEASURED WITH A SUPER CVR. -ALTERNATE- SPURIOUS OUTPUTS, mV PEAK (MAX) MEASURED WITH A SUPER CVR & WITH 2 FERRITE BEADS ON THE LIM SW TTL LINE. SEE FIGURE 10.	200	200	 350 300	 350 300
C DELETED					
3.17	RECOVERY TIME, nSEC (MAX)	500	500	2000	2000

Raytheon Company Lexington MA 02173

DR. | CHK. | SCALE | SIZE A | CAGE CODE 49956 | DRAWING NO. 929050 | SHEET 5 | REV AN

APPLICATION		REVISIONS				
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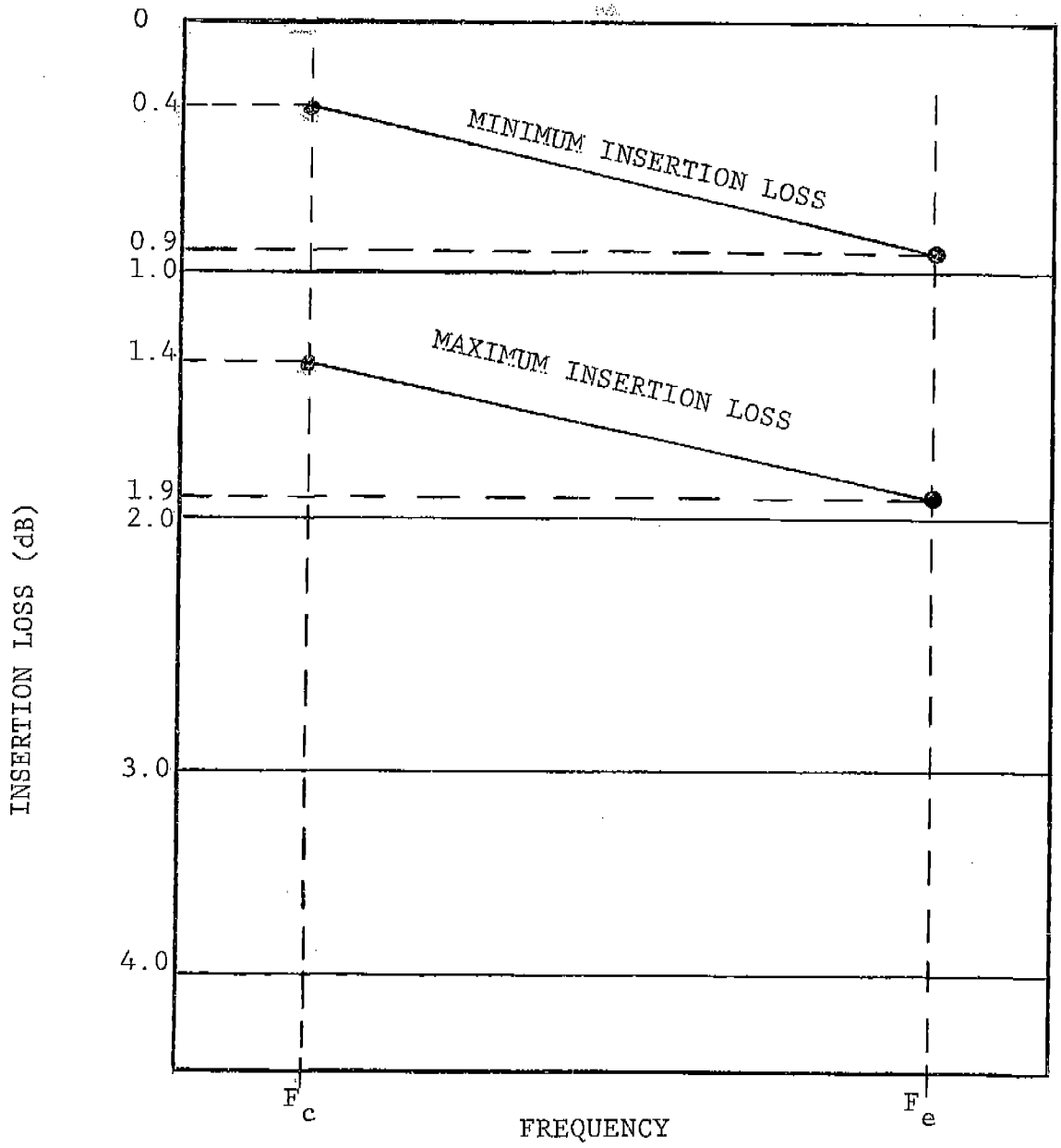


FIGURE 1. INSERTION LOSS LIMITS

929050-1

RAYTHEON COMPANY LEXINGTON, MASS. 02173			
DR	SIZE A	CODE IDENT NO. 49956	DRAWING NO. 929050
CHK	SCALE	REV A	SHEET 6

APPLICATION		REVISIONS				
NEXT ASSY	USED ON	REV	A	DESCRIPTION	DATE	APPROVED

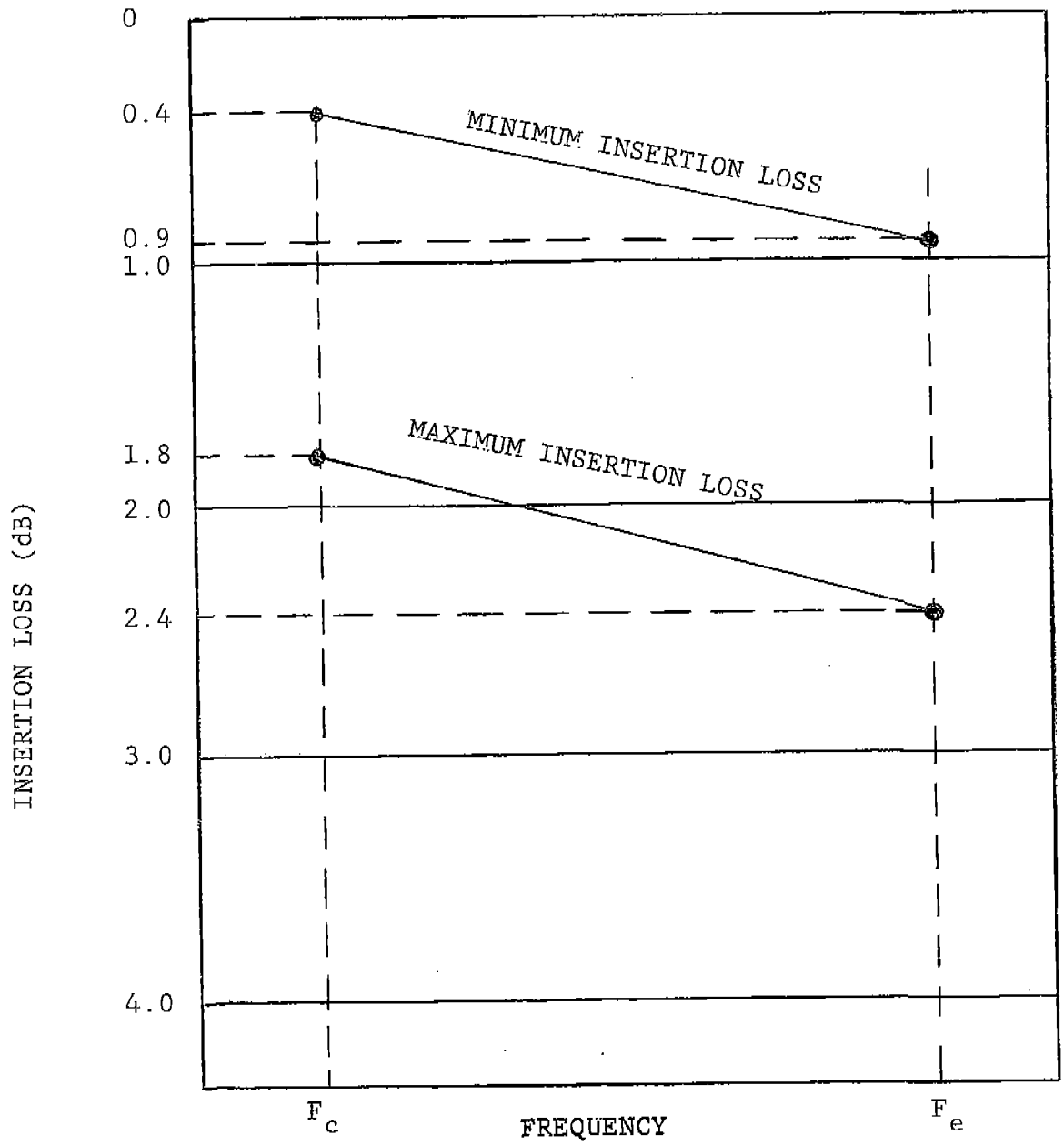


FIGURE 2 - INSERTION LOSS LIMITS
929050-2

RAYTHEON COMPANY LEXINGTON, MASS. 02173	SIZE A	CODE IDENT NO. 49956	DRAWING NO. 929050
DR			
CHK	SCALE	REV A	SHEET 7

APPLICATION		REVISIONS			
NEXT ASSY	USED ON	REV	DESCRIPTION	DATE	APPROVED

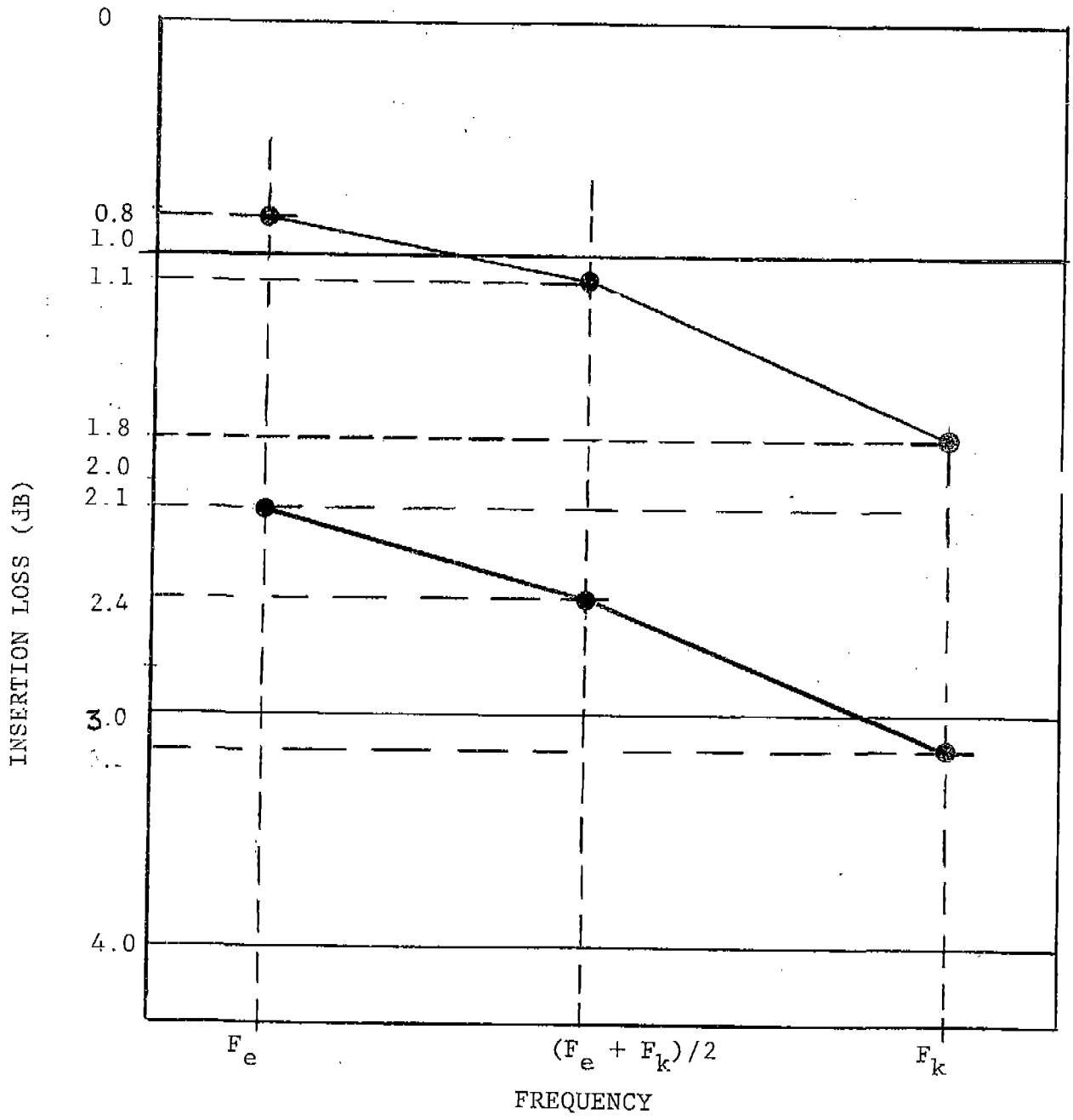


FIGURE 3. INSERTION LOSS LIMITS

929050-3

RAYTHEON COMPANY LEXINGTON, MASS. 02173			
DR	SIZE A	CODE IDENT NO. 49956	DRAWING NO. 929050
CHK	SCALE	REV U	SHEET 8

APPLICATION		REVISIONS				
NEXT ASSY	USED ON	REV	A	DESCRIPTION	DATE	APPROVED

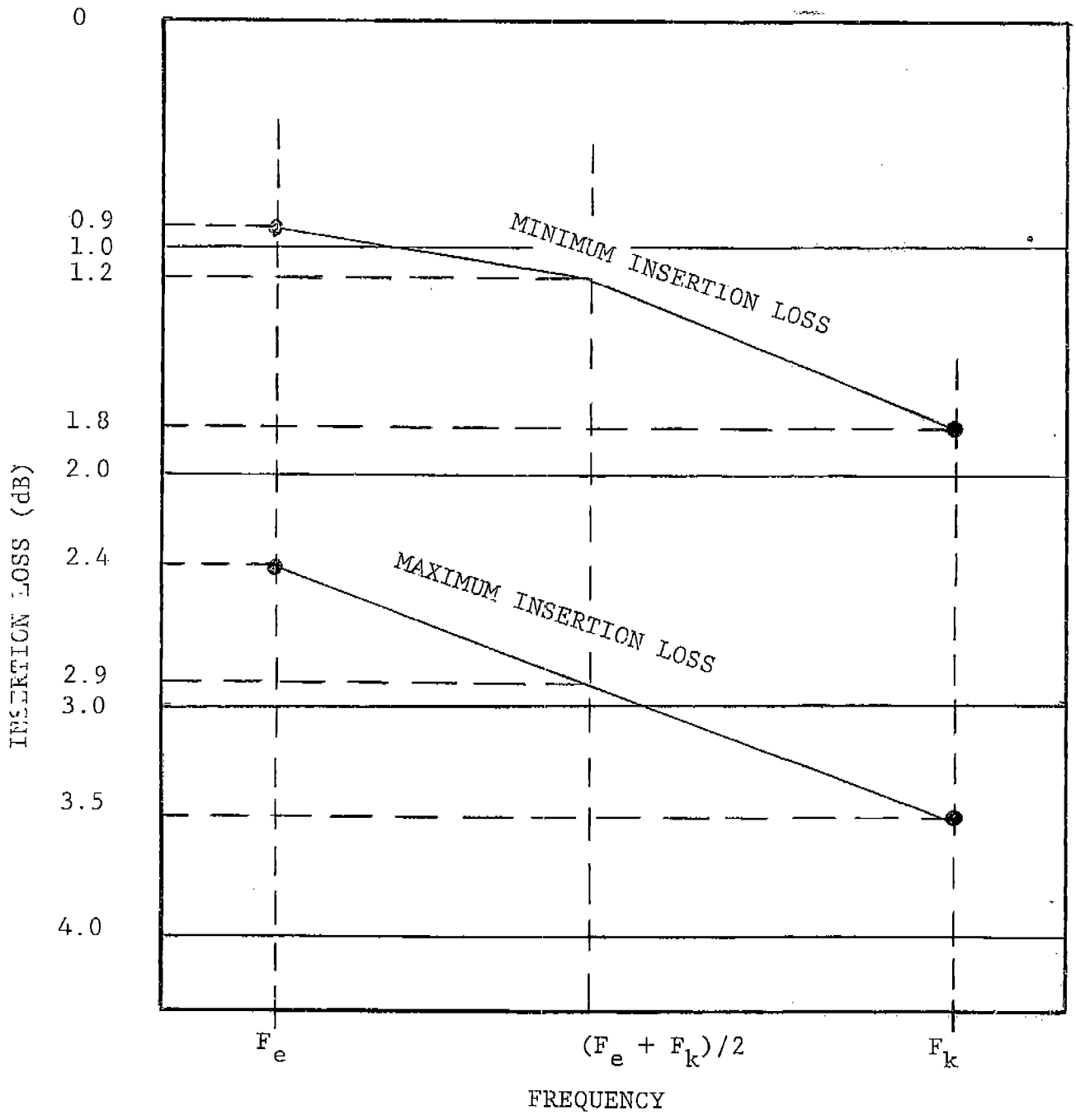


FIGURE 4. INSERTION LOSS LIMITS

929050-4

RAYTHEON COMPANY LEXINGTON, MASS. 02173				
DR	SIZE A	CODE IDENT NO. 49956	DRAWING NO. 929050	
CHK	SCALE	REV A	SHEET 9	

3.3 THE ASSEMBLY SHALL MEET ALL SPECIFIED REQUIREMENTS WHEN THE RISE TIMES OF RF INPUT PULSES ARE AS FOLLOWS FOR THE AMPLITUDES INDICATED:

RF INPUT PULSE AMPLITUDE	RISE TIME
LESS THAN OF EQUAL TO AMPLITUDE PRODUCING 1 dB COMPRESSION	40 ns, MINIMUM
GREATER THAN 1 dB COMPRESSION POINT UP TO PEAK POWER RATING (+50 dBm)	100 ns, MINIMUM

RISE TIME IS DEFINED TO BE THE INTERVAL BETWEEN THE 10 PERCENT AND 90 PERCENT POINTS OF THE RF VOLTAGE ENVELOPE.

3.4 WITH A LOGIC "1" CONTROL INPUT LEVEL ("OFF" CONDITION), ISOLATION BETWEEN J1 AND J2 SHALL BE NO LESS THAN THE VALUE SPECIFIED IN TABLE I.

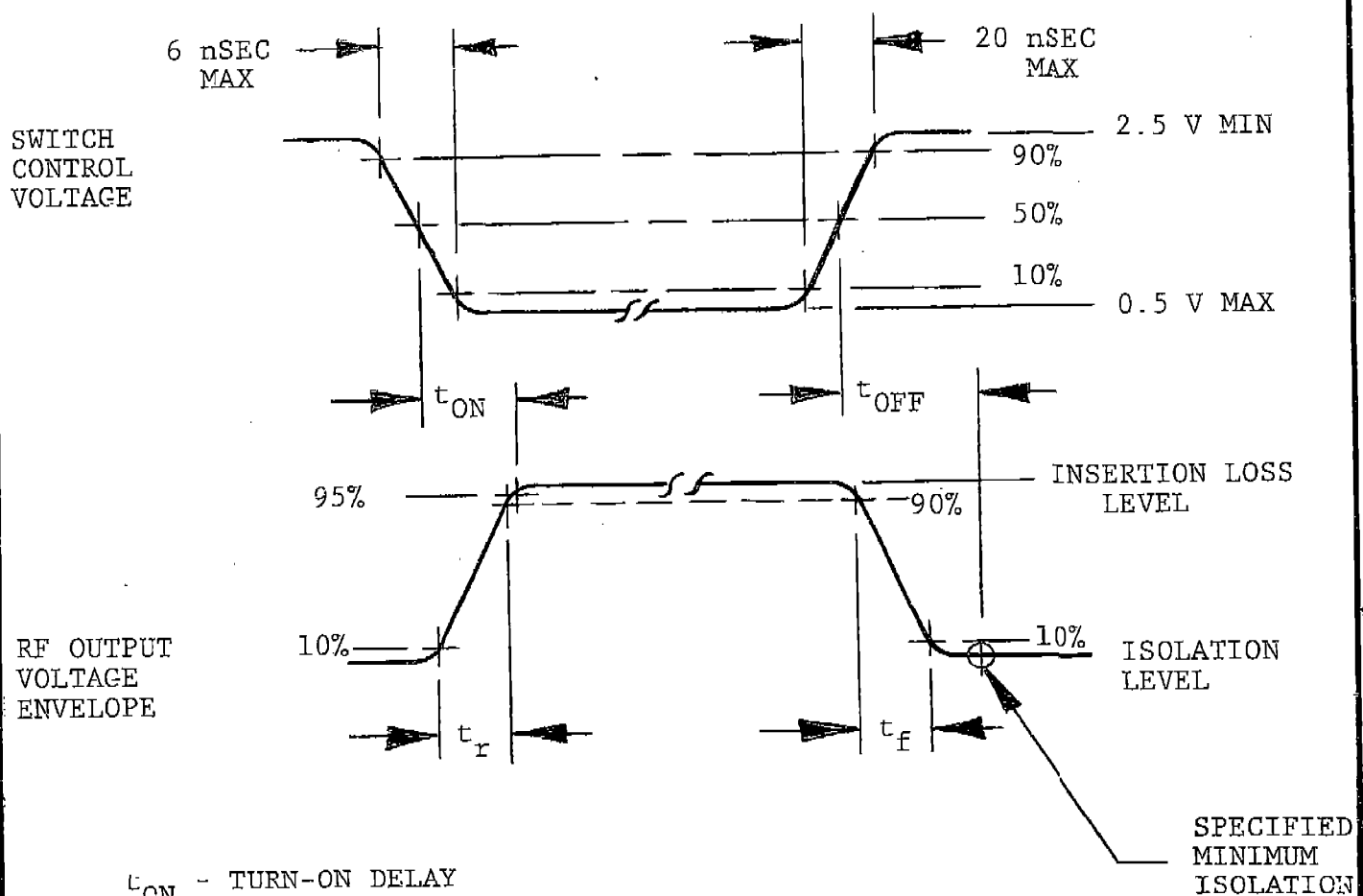
3.5 VSWR, WITH THE SWITCH IN THE "ON" CONDITION, SHALL NOT EXCEED THE VALUE SPECIFIED IN TABLE I AT THE INPUT AND OUTPUT PORTS. VSWR SPECIFICATIONS APPLY TO OPERATION WITH 50 OHM SOURCE AND LOAD IMPEDANCES.

3.6 VSWR, WITH THE SWITCH IN THE "OFF" CONDITION, SHALL NOT EXCEED THE VALUE SPECIFIED IN TABLE I AT THE INPUT PORT ONLY.

3.7 THE OUTPUT ONE dB COMPRESSION POINT OF THE ASSEMBLY SHALL BE NOT LESS THAN THE VALUE SPECIFIED IN TABLE I.

3.8 THE ASSEMBLY SHALL PROVIDE HARD LIMITING OF THE RF SIGNAL AT POWER LEVELS LESS THAN AND EQAUL TO THE LEVEL SPECIFIED IN TABLE I. EXCEPT FOR SPIKE LEAKAGE, THE PEAK AND CW OUTPUT POWER SHALL NOT EXCEED THE SPECIFIED HARD-LIMITING LEVEL AT THE MAXIMUM INPUT POWER SPECIFIED IN NOTE 3.10 WITH RISE TIMES SPECIFIED IN 3.3.

APPLICATION		REVISIONS				
NEXT ASSY	USED ON	REV	A	DESCRIPTION	DATE	APPROVED



t_{ON} - TURN-ON DELAY

t_{OFF} - TURN-OFF DELAY

t_r - RF RISE TIME

t_f - RF FALL TIME

FIGURE 5 - SWITCHING SPEED DEFINITIONS (SEE 3.11)

RAYTHEON COMPANY LEXINGTON, MASS. 02173			
DR	SIZE A	CODE IDENT NO. 49956	DRAWING NO. 929050
CHK	SCALE	REV A	SHEET 11

3.9 RF SPIKE LEAKAGE AT THE OUTPUT, WITH A +50 OHM dBm RF PULSE APPLIED TO THE INPUT WITH RISE TIME AS SPECIFIED IN 3.3, SHALL NOT EXCEED THE ENERGY AND PULSE WIDTH SPECIFIED IN TABLE I, WHERE SPIKE WIDTH IS MEASURED AT THE HALF-POWER LEVEL OF THE SPIKE, AND SPIKE ENERGY IS DEFINED AS THE AREA OF THAT PORTION AT THE LEADING EDGE OF THE RF OUTPUT PULSE DURING WHICH THE SPIKE EXCEEDS THE HARD LIMITING LEVEL, EXPRESSED IN ERGS.

3.10 THE ASSEMBLY SHALL BE CAPABLE OF HANDLING THE PEAK AND CONTINUOUS RF POWER LEVELS SPECIFIED IN TABLE I WITHOUT DAMAGE AT AMBIENT AIR TEMPERATURES SPECIFIED IN TABLE IV.

3.11 THE ASSEMBLY SHALL CONFORM TO THE SWITCHING SPEED REQUIREMENTS OF 3.11.1 THRU 3.11.3 WHEN THE SPECIFIED TIME INTERVALS ARE DEFINED AS SHOWN IN FIGURE 5. THESE SWITCHING REQUIREMENTS SHALL BE SATISFIED AND THE SWITCHING STATES SHALL BE PRESERVED FOR PULSE WIDTHS ("ON" STATE) RANGING FROM 0.25 MICROSECONDS TO CW FOR PULSE WIDTHS RANGING FROM 0.25 MICROSECONDS TO 300 MICROSECONDS (IN EITHER THE "ON" OR "OFF" STATE), THE ASSEMBLY SHALL OPERATE WITH A MAXIMUM PULSE REPETITION RATE OF 27,000 PPS AND A MAXIMUM DUTY CYCLE OF 75%.

3.11.1 TURN-ON DELAY (t_{ON}) SHALL BE WITHIN THE TOLERANCES SPECIFIED IN TABLE I.

3.11.2 TURN-OFF DELAY (t_{OFF}), FROM THE 50 PERCENT POINT OF THE CONTROL INPUT VOLTAGE TRANSITION TO THE POINT WHERE RF ISOLATION EQUALS THE SPECIFIED MINIMUM, SHALL NOT EXCEED THE DELAY SPECIFIED IN TABLE I.

3.11.3 RISE TIME, (t_r) AND FALL TIME (t_f) OF THE RF OUTPUT SHALL NOT EXCEED THE VALUES SPECIFIED IN TABLE I.

3.12 THE ASSEMBLY SHALL OPERATE AS SPECIFIED WHEN THE SWITCH CONTROL INPUT IS DRIVEN BY A TTL LOGIC GATE, SERIES 54S OR EQUIVALENT, WITH LOGIC STATES AND VOLTAGE LEVELS AS SPECIFIED IN TABLE II. CONTROL INPUT CURRENT SHALL NOT EXCEED THE VALUES INDICATED.

TABLE II - SWITCH CONTROL INPUTS

	SERIES 54S OR EQUIVALENT			POWER SUPPLY REPLACING 54S DEVICE FOR TEST PURPOSE
LOGIC STATE	INPUT VOLTAGE MIN.	INPUT VOLTAGE MAX.	INPUT CURRENT MAX.	INPUT CURRENT MAX.
0	0 VDC	0.5 VDC	16 mA SINK	16 mA SINK
1	2.5 VDC	5.0 VDC	0.5 mA SOURCE AT 2.5 VDC	10 mA SINK TO 0.5 mA SOURCE AT 2.5 VDC

3.13 IN THE LOGIC "1" STATE, DRIVER CIRCUITRY WITHIN THE ASSEMBLY SHALL NOT APPLY A VOLTAGE GREATER THAN 5.5 VOLTS TO THE OUTPUT OF THE EXTERNAL DRIVING GATE.

3.14 THE RF PORTS SHALL BE ISOLATED FROM INTERNAL DC VOLTAGES AND CURRENTS. THE DC VOLTAGE RATING BETWEEN THE CENTER CONDUCTOR OF EACH RF CONNECTOR AND THE CASE OF THE ASSEMBLY SHALL BE NOT LESS THAN 50 VOLTS. THE DEVICE MUST BE CAPABLE OF OPERATING INTO EITHER A DC SHORT OR OPEN.

3.15 FOR 929050-1 & -2:
SPURIOUS SIGNALS AT THE RF OUTPUT PORT, J2, GENERATED BY INTERNAL SWITCHING VOLTAGES SHALL BE DETECTED WITH A BAND 2 CVR, P.N. 929164-2, AND A BAND 2 FILTER, P.N. 848070-1, PROVIDED BY THE PROCURING ACTIVITY. THE MAXIMUM OUTPUT OF THE CVR INTO A 93 ohm ± 1 ohm RESISITOR SHALL BE 200 MILLIVOLTS. REFER TO FIGURE 9 FOR THE TEST SETUP.
FOR 929050-3 & -4:
SPURIOUS SIGNALS AT THE RF OUTPUT PORT, J2, GENERATED BY INTERNAL SWITCHING VOLTAGES SHALL BE DETECTED WITH A "SUPER CVR", P.N. G258788 PROVIDED BY RAYTHEON. THE MAXIMUM OUTPUT OF THE SUPER-CVR INTO A 93 ohm ± 1 ohm RESISITOR SHALL BE 350 MILLIVOLTS.
AS AN OPTION, 2 FERRITE BEADS, RAYTHEON P.N. 929199-19 MAY BE USED ON THE TTL INPUT LINE. IF THE FERRITE BEADS ARE USED, THE MAXIMUM OUTPUT OF THE SUPER-CVR SHALL BE 300 MILLIVOLTS. REFER TO FIGURE 10 FOR THE TEST SETUP.

3.16 WHEN AN OUT OF BAND (BELOW Fc OR ABOVE Fe) RF SIGNAL IS PRESENTED AT THE RF INPUT TO THE LIMITER SWITCH (POWER LEVEL-5.0±0,5 dBm), THE LIMITER SWITCH SHALL LIMIT THE AMOUNT OF IN BAND (Fc TO Fe) HARMONICS OR SPURIOUS SIGNALS SO THAT THE VIDEO VOLTAGE OUTPUT (AS DETECTED WITH A SUPER CVR P/N G258788) IS BELOW 200 MILLIVOLTS, MEASURED INTO A 93 ± 1 OHM LOAD.

3.17 RECOVERY TIME IS DEFINED AT THE CONDITION WHERE TWO PULSED SIGNALS AT SEPARATE FREQUENCIES, F_1 AND F_2, WITHIN THE SPECIFIED FREQUENCY RANGE AND WITH THE PULSE TIMING AND POWER LEVELS SHOWN IN FIGURE 6 ARE INJECTED AT THE INPUT PORT (J1). THE TIME INTERVAL, DEFINED AS T_R IN FIGURE 6, FOR THE OUTPUT OF THE LOWER POWER PULSE TO RECOVER TO WITHIN 1 dB OF THE NORMAL LOW LOSS LEVEL SHALL NOT EXCEED THE VALUE SHOWN IN TABLE I.

APPLICATION		REVISIONS				
NEXT ASSY	USED ON	REV	A	DESCRIPTION	DATE	APPROVED

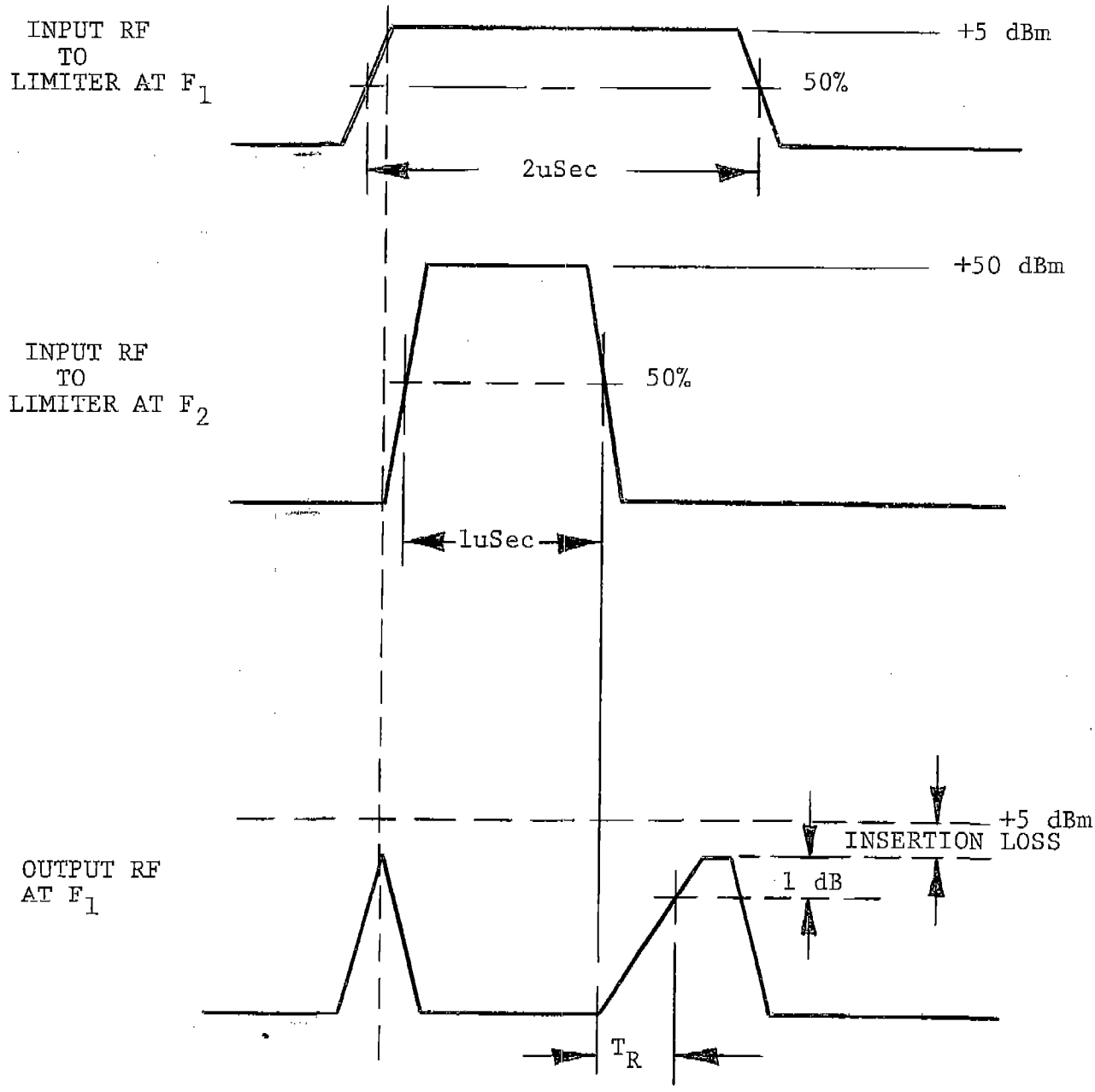


FIGURE 6 - RECOVERY TIME

RAYTHEON COMPANY LEXINGTON, MASS. 02173			
DR	SIZE A	CODE IDENT NO. 49956	DRAWING NO. 929050
CHK	SCALE	REV A	SHEET 14

3.18 THE ASSEMBLY SHALL PERFORM AS SPECIFIED HEREIN WHEN OPERATED WITH SUPPLY VOLTAGES HAVING THE CHARACTERISTICS DEFINED IN TABLE III.

TABLE III - POWER SUPPLY CHARACTERISTICS

VOLTAGE (VDC)	TOLERANCE* (PERCENT)	RIPPLE AND NOISE MAX (mV P-P)	CURRENT AVAILABLE TO ASSEMBLY, MAX (mA)
+15.0	± 5.0	100	45
-15.0	± 5.0	100	45

* TOLERANCE INCLUDES REGULATION AND INITIAL ADJUSTMENT ACCURACY.

3.19 WITH THE RF PORTS PROPERLY TERMINATED AND MAXIMUM RF POWER APPLIED TO J1 OVER THE SPECIFIED FREQUENCY RANGE, THE UNIT SHALL CONFORM TO THE CONDUCTED AND RADIATED ELECTROMAGNETIC INTERFERENCE REQUIREMENTS OF MIL-STD-461 FOR CLASS IC EQUIPMENT, AS MODIFIED BY NOTICE 1 (7 FEB 1969), WITH THE FREQUENCY RANGE FOR NARROWBAND RADIATED EMISSIONS EXTENDED BY EXTRAPOLATION OF THE LIMITS FOR METHOD REO2 TO COVER THE SPECIFIED FREQUENCY RANGE OF THE UNIT.

4. CONSTRUCTION REQUIREMENTS.

4.1 THE OUTLINE AND PHYSICAL DIMENSIONS SHALL BE AS SHOWN IN FIGURE 7.

4.2 ALL MATERIALS AND FINISHES USED IN THIS UNIT SHALL CONFORM TO THE REQUIREMENTS OF MIL-E-16400, WITH RESPECT TO MATERIALS, COATINGS AND TREATMENTS, CORROSION RESISTANCE, DISSIMILAR METALS, FUNGUS-INERT MATERIALS, AND FLAMMABLE MATERIALS.

4.3 ALL MATERIALS, INCLUDING FINISHES, LABELS, ADHESIVES, MARKING INK, ETC, SHALL BE RESISTANT TO THE SOLVENT SOLUTIONS SPECIFIED IN MIL-STD-202, METHOD 215. THE REQUIREMENT FOR IMMERSION OF THE DEVICE IN THE SOLUTIONS DOES NOT APPLY.

APPLICATION		REVISIONS			
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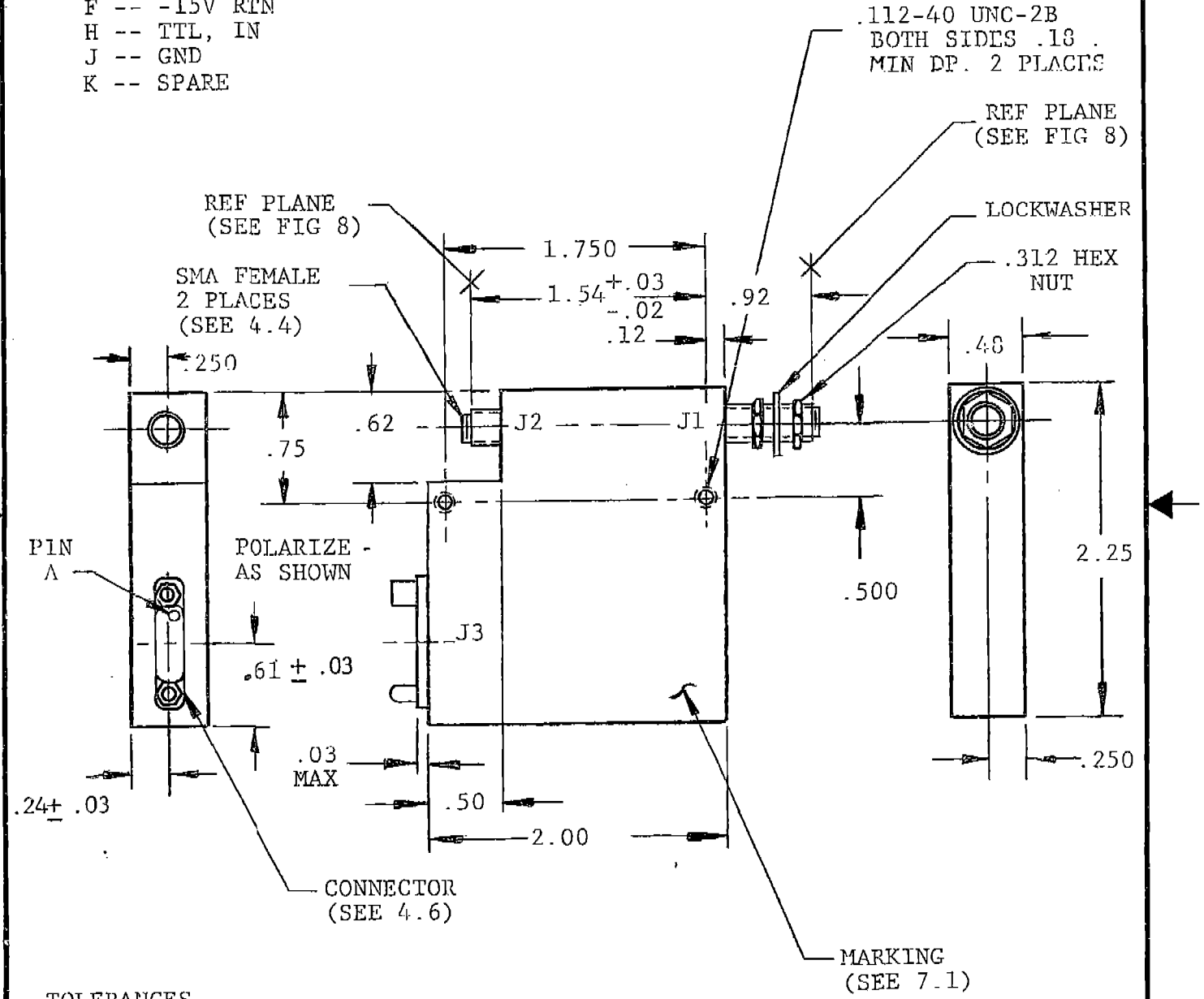
CONNECTOR J3

A -- +15V
B -- +15V RTN
C -- SPARE
D -- SPARE
E -- -15V
F -- -15V RTN
H -- TTL, IN
J -- GND
K -- SPARE



TOLERANCES
.XX ± .02
.XXX ± .010

FIGURE 7
OUTLINE AND DIMENSIONS

RAYTHEON COMPANY LEXINGTON, MASS. 02173	SIZE A	CODE IDENT NO. 49956	DRAWING NO. 929050
DR			
CHK	SCALE	REV V	SHEET 16

4.4 THE RF CONNECTORS SHALL BE TYPE SMA JACKS AND SHALL CONFORM TO THE REQUIREMENTS OF MIL-C-39012 FOR SERIES SMA CONNECTORS, WITH THE FOLLOWING ADDITIONS AND EXCEPTIONS:

A. THE INTERFACE OF EACH CONNECTOR SHALL COMPLY WITH THE REQUIREMENTS OF FIGURE 8, EXCEPT THE INSULATOR WITHIN THE J1 CONNECTOR MAY BE RECESSED UP TO 0.015 INCH. CONNECTOR J1 SHALL HAVE THREADS MEETING THE REQUIREMENTS OF FIGURE 8 FOR THE MINIMUM DISTANCE SPECIFIED, AND THE JAM NUTS AND LOCK WASHERS SHALL RUN FREELY THE FULL LENGTH OF THE CONNECTOR.

B. THE CONNECTORS SHALL EXHIBIT A SHIELDING EFFECTIVENESS OF -90 dB, MINIMUM, OVER THE OPERATING FREQUENCY RANGE SPECIFIED IN TABLE I.

C. THE CENTER CONTACT AND THE DIELECTRIC WITHIN THE CONNECTOR SHALL BE CAPTIVATED WITH RESPECT TO THE CONNECTOR BODY: BOTH PARTS SHALL REMAIN WITHIN THE SPECIFIED INTERFACE DIMENSIONS, AND NEITHER PART SHALL DISPLACE MORE THAN 0.002 INCH WHEN SUBJECTED TO AN AXIAL LOAD OF 5.0 TO 5.5 POUNDS IN EITHER DIRECTION.

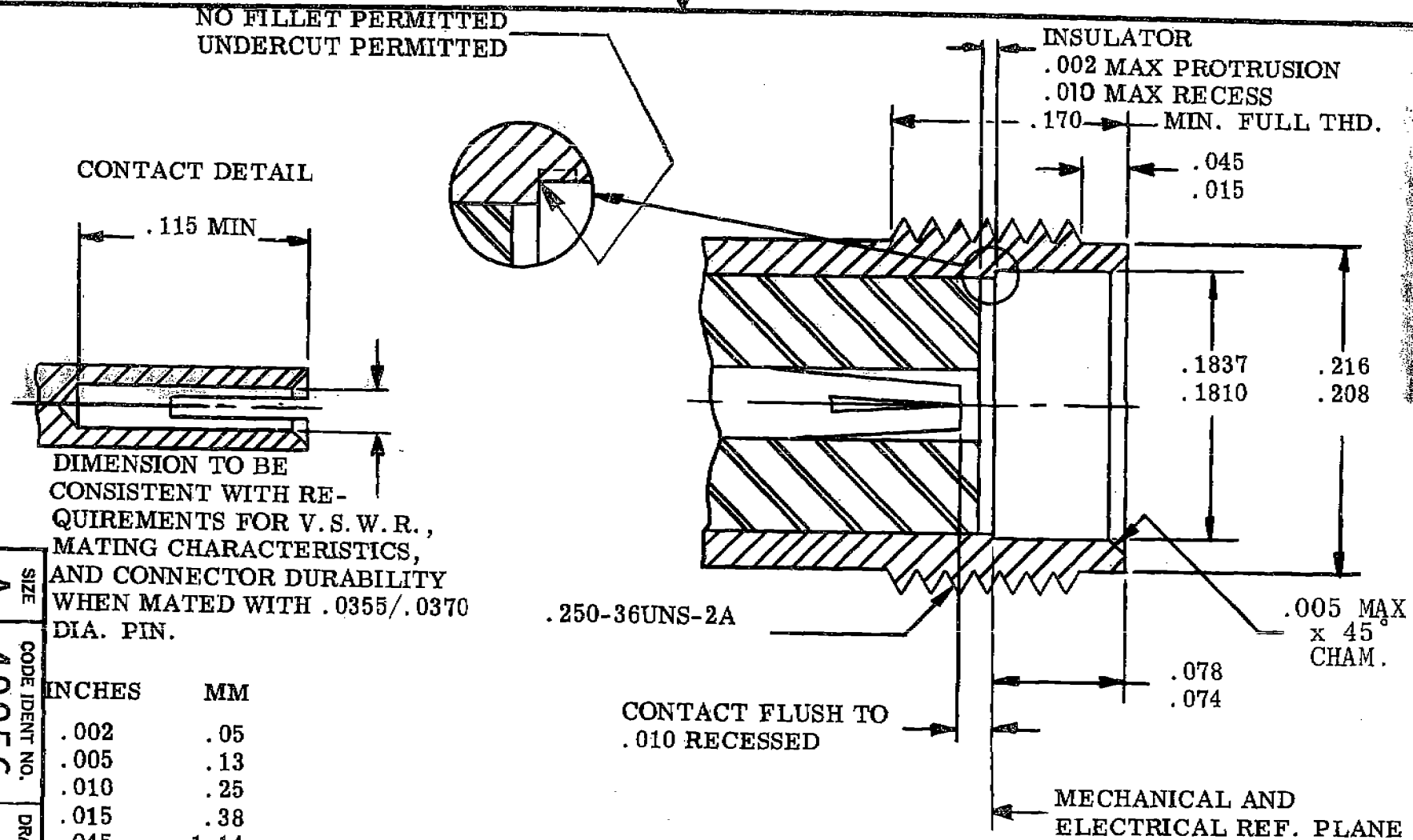
D. THE CONNECTOR BODY SHALL BE MADE OF CORROSION RESISTANT STEEL PER MIL-C-39012. THE FINISH MAY BE, AT THE OPTION OF THE MANUFACTURER, EITHER GOLD PLATED OR PASSIVATED.

4.5 RF CONNECTOR BODIES SHALL NOT BE LOOSENED WITH RESPECT TO THE UNIT CASE BY AN APPLICATION OF 20 INCH-POUNDS OF TORQUE.

4.6 THE DC POWER AND SWITCH-COMMAND CONNECTOR (J3) SHALL MATE WITH MMM9SSL (CONTINENTAL CONNECTOR CORP) OR EQUIVALENT.

4.7 THE PREFERRED TYPES OF SEMICONDUCTORS FOR USE IN THIS UNIT SHALL BE JANTXV LEVEL IN ACCORDANCE WITH THE REQUIREMENTS OF MIL-S-19500. ALTERNATE TYPES OF DEVICES OR DIFFERENT DEVICE SCREENING PROCEDURES MAY BE USED ON THE BASIS OF SOUND ENGINEERING PRINCIPLES OR PARTS APPLICATION EXPERIENCE, PROVIDED THAT ALL OF THE OTHER REQUIREMENTS SPECIFIED HEREIN ARE MET.

4.8 ESTABLISHED RELIABILITY (ER) RESISTORS AND CAPACITORS SHALL BE USED EXCEPT WHERE THERE IS NO SUITABLE ER PART FOR THE PURPOSE.



INCHES	MM
.002	.05
.005	.13
.010	.25
.015	.38
.045	1.14
.074	1.88
.078	1.98
.115	2.92
.170	4.32
.1810	4.60
.1837	4.67
.208	5.28
.216	5.49
.250	6.35

SIZE	CODE IDENT NO.	DRAWING NO.
A	49956	929050

SCALE NONE REV N SHEET 18

FIGURE 8

SERIES SMA JACK & RECEPTACLE INTERFACE

4.9 THE PREFERRED TYPES OF MICROCIRCUITS FOR USE IN THIS ITEM SHALL BE CLASS B PRODUCT ASSURANCE LEVEL IN ACCORDANCE WITH THE REQUIREMENTS OF MIL-M-38510. ALTERNATE TYPES OF DEVICES OR DIFFERENT DEVICE SCREENING PROCEDURES MAY BE USED ON THE BASIS OF SOUND ENGINEERING PRINCIPLES OR PARTS USE EXPERIENCE, PROVIDED THAT ALL OF THE OTHER REQUIREMENTS SPECIFIED HEREIN ARE MET.

4.10 THE WEIGHT OF THE ASSEMBLY SHALL NOT EXCEED 4 OUNCES.

4.11 PRINTED WIRING BOARDS, IF USED, SHALL BE IN ACCORDANCE WITH MIL-P-55110.

4.12 STANDARD GENERAL REQUIREMENTS. THE REQUIREMENTS SPECIFIED IN MIL-STD-454 SHALL APPLY IN THEIR ENTIRETY WITH THE FOLLOWING EXCEPTIONS:

A. THE REQUIREMENTS OF MIL-P-55110 SHALL TAKE PRECEDENCE OVER MIL-STD-454 IN THE EVENT OF CONFLICT BETWEEN THESE DOCUMENTS AND MIL-STD-454.
B. EXCEPT AS NOTED IN PART A ABOVE, THE REQUIREMENTS OF MIL-STD-454 SHALL TAKE PRECEDENCE OVER OTHER MILITARY DOCUMENTS SPECIFIED HEREIN IN THE EVENT OF A CONFLICT BETWEEN MIL-STD-454 AND THESE DOCUMENTS.
C. THE FOLLOWING SPECIFIC REQUIREMENTS OF MIL-STD-454 DO NOT APPLY: REQUIREMENTS 10, 14, 16, 30, 38, 41, 50, 53, 57, 58, 60, 61, 64, 66, 69, AND 71.

4.13 SENSITIVE ELECTRONIC DEVICES AND ELECTROSTATIC DISCHARGE CONTROL. THIS ITEM REQUIRES PROTECTION AGAINST ELECTROSTATIC DISCHARGES. AN ELECTROSTATIC DISCHARGE CONTROL PROGRAM FOR PROTECTION OF ELECTRICAL AND ELECTRONIC PARTS, ASSEMBLIES AND EQUIPMENT SHALL BE IN ACCORDANCE WITH DOD-STD-1686 CLASS 1 AND 2 AND DOD-HDBK-263. AN ELECTROSTATIC DISCHARGE CONTROL PROGRAM IN ACCORDANCE WITH MIL- STD-1686 IS ACCEPTABLE.

5. ENVIRONMENTAL REQUIREMENTS

5.1 THE DEVICE SHALL MEET ALL SPECIFIED PERFORMANCE REQUIREMENTS DUPING EXPOSURE TO THE OPERATING ENVIRONMENTAL CONDITIONS DEFINED IN TABLE IV AND SUBSEQUENT TO EXPOSURE TO THE NON-OPERATING ENVIRONMENTAL CONDITIONS DEFINED HEREIN.

5.2 THE DEVICE SHALL OPERATE AS SPECIFIED AT ALL TEMPERATURES BETWEEN -28°C AND +72°C.

5.3 OPERATION FOR A PERIOD OF TWO HOURS AT AMBIENT AIR TEMPERATURES UP TO +90°C SHALL NOT DAMAGE THE DEVICE. PERFORMANCE DEGRADATION IS ACCEPTABLE DURING THE OVER-TEMPERATURE CONDITION, BUT THE DEVICE SHALL MEET ALL SPECIFIED PERFORMANCE REQUIREMENTS WHEN TEMPERATURES ARE RETURNED TO THE SPECIFIED CONTINUOUS OPERATING RANGE.

6. TEST REQUIREMENTS

6.1 QUALIFICATION TESTS.

6.1.1 PRIOR TO INITIATION OF QUALIFICATION TESTS, THE SUPPLIER SHALL SUBMIT A DETAILED TEST PLAN TO RAYTHEON ESD FOR APPROVAL. THE TEST PLAN SHALL INCLUDE TEST PROCEDURES, CRITERIA FOR ACCEPTANCE OR REJECTION, A DESCRIPTION OF TEST EQUIPMENT TO BE USED, AND SAMPLES OF TEST DATA SHEETS.

6.1.2 A QUALIFICATION TEST REPORT SHALL BE PREPARED IN ACCORDANCE WITH MIL-STD-831. TWO REPRODUCIBLE COPIES OF THE REPORT SHALL BE FURNISHED TO RAYTHEON ESD AFTER TEST COMPLETION.

6.1.3 UPON FORMAL NOTIFICATION OF SOURCE APPROVAL BY RAYTHEON, ELECTROMATNETIC SYSTEMS DIVISION, NO CHANGE SHALL BE MADE IN DESIGN, PROCESSES, OR MATERIALS, WITHOUT PRIOR AUTHORIZATION, IN WRITING, FROM RAYTHEON ESD OR THE PROCURING ACTIVITY. REQUESTS FOR SUCH CHANGES SHALL BE ACCOMPANIED BY QUANTITATIVE EVIDENCE OF THE EFFECT OF THE CHANGES UPON THE QUALITY AND PERFORMANCE CHARACTERISTICS OF THE PRODUCT.

6.1.4 THE ITEM SHALL BE SUBJECTED TO A COMPLETE VISUAL AND MECHANICAL INSPECTION TO DETERMINE CONFORMANCE TO MECHANICAL AND DIMENSIONAL, FINISH, CONNECTOR MATING, MARKING, AND WORKMANSHIP REQUIREMENTS.

6.1.5 COMPLETE ELECTRICAL PERFORMANCE MEASUREMENTS SHALL BE CONDUCTED ON THE ITEM.

TABLE IV - ENVIRONMENTAL CONDITIONS

TEMPERATURE (NON-OPERATING)	-54°C TO +75°C
TEMPERATURE (OPERATING)	
AMBIENT AIR	-28°C TO +72°C CONTINUOUS
OVER TEMPERATURE (SEE 5.3)	+90°C MAX FOR 2 HOURS
ALTITUDE (OPERATING)	SEA LEVEL
ALTITUDE (STORAGE AND TRANSPORT)	SEA LEVEL TO 50,000 FEET
RANDOM VIBRATION	POWER SPECTRAL DENSITY OF 0.04 G^2/HZ FROM 100 HZ TO 350 HZ. ONE 10 - MINUTE PERIOD OF EXPOSURE IN THE MOST CRITICAL AXIS.

SINUSOIDAL VIBRATION (OPERATING)
3 ORTHOGONAL AXES

FREQUENCY	LEVELS
4 - 20 HZ	0.5 INCH D.A.
20 - 42 HZ	10.0 G

INPACT SHOCK (OPERATING)	50 G, 11 MILLISECOND DURATION, HALF SINE WAVEFORM.
SALT-SPRAY	MIL-STD-202, METHOD 101, CONDITION B.
HUMIDITY (OPERATING AND NON-OPERATING)	UP TO 100 PERCENT INCLUDING CONDITIONS WHERE CONDENSATION TAKES PLACE IN THE FORM OF WATER OR FROST.
MAGNETIC FIELD (NON-OPERATING)	0 TO 20 OERSTEDS WITH A MAXIMUM RATE OF CHANGE OF 20 OERSTEDS PER SECOND.

6.1.6 LOW TEMPERATURE TESTS SHALL BE PERFORMED IN ACCORDANCE WITH MIL-STD-810, METHOD 502, PROCEDURE I. THE TIME AT LOW STORAGE TEMPERATURE SHALL BE 24 HOURS. ELECTRICAL MEASUREMENTS, SPECIFIED IN THE QUALIFICATION TEST PLAN, SHALL BE PERFORMED AT -28°C.

6.1.7 HIGH TEMPERATURE TESTS SHALL BE PERFORMED IN ACCORDANCE WITH MIL-STD-810, METHOD 501, PROCEDURE I, MODIFIED FOR A MAXIMUM STORAGE TEMPERATURE OF +75°C. ELECTRICAL MEASUREMENTS, SPECIFIED IN THE QUALIFICATION TEST PLAN, SHALL BE PERFORMED AT +72°C.

6.1.8 THE ITEM SHALL BE SUBJECTED TO SINUSOIDAL VIBRATION TESTING IN ACCORDANCE WITH MIL-STD-202, METHOD 201, EXCEPT THE DURATION SHALL BE 3 HOURS PER AXIS AND THE LEVELS SHALL BE AS SPECIFIED IN TABLE IV. DURING ONE SWEEP IN EACH AXIS OF VIBRATION, AN RF SIGNAL SHALL BE APPLIED TO THE INPUT AND THE OUTPUT SHALL BE MONITORED FOR VIBRATION INDUCED MODULATION.

6.1.9 THE ITEM SHALL BE SUBJECTED TO RANDOM VIBRATION IN ACCORDANCE WITH MIL-STD-202, METHOD 214, EXCEPT THE POWER SPECTRAL DENSITY SHALL BE 0.04 G^2/HZ OVER A VIBRATION FREQUENCY BAND OF 100 HZ TO 350 HZ, ROLLOFF OF 3 dB/OCTAVE MINIMUM, AND VIBRATION SHALL BE APPLIED FOR 10 MINUTES IN ONE AXIS. VIBRATION SHALL BE APPLIED IN THE AXIS IN WHICH THE ITEM IS MOST SUSCEPTIBLE TO VIBRATION. D.C. VOLTAGES AND RF POWER SHALL BE APPLIED TO THE DEVICE DURING VIBRATION, BUT PERFORMANCE NEED NOT BE MONITORED.

6.1.10 THE ITEM SHALL BE SUBJECTED TO SHOCK TESTING IN ACCORDANCE WITH MIL-STD-202, METHOD 213, TEST CONDITION A.

6.1.11 THE ITEM SHALL BE SUBJECTED TO THE MOISTURE RESISTANCE TEST DEFINED IN MIL-STD-202, METHOD 106, WITH STEP 7B OMITTED. POLARIZATION OR LOADING VOLTAGE IS NOT REQUIRED.

6.1.2 THE ITEM SHALL BE SUBJECTED TO THE SALT SPRAY TEST DEFINED IN MIL-STD-202, METHOD 101, TEST CONDITION B.

6.1.13 LIFE TEST. THE ASSEMBLY SHALL BE OPERATED FOR A TOTAL OF 1000 HOURS AT ELECTRICAL OPERATING CONDITIONS TO BE SPECIFIED IN THE QUALIFICATION TEST PROCEDURE. DURING THE OPERATING PORTION OF THE TEST, THE ASSEMBLY TEMPERATURE SHALL BE MAINTAINED AT +72°C. FOR A TWO HOUR PERIOD DURING EACH 24 HOUR PERIOD, OPERATING VOLTAGES SHALL BE REMOVED AND THE ASSEMBLY TEMPERATURE SHALL BE ALLOWED TO RETURN TO ROOM AMBIENT CONDITIONS. ELECTRICAL MEASUREMENTS SHALL BE PERFORMED PRIOR TO INITIATION OF THE TEST AND AT 500 HOUR INTERVALS THROUGHOUT THE TEST. MEASUREMENTS SHALL BE AS SPECIFIED IN THE QUALIFICATION TEST PROCEDURE.

6.2 ACCEPTANCE TESTS.

6.2.1 THE SUPPLIER SHALL PERFORM THE ACCEPTANCE TEST LISTED IN 6.2.2 AND 6.2.3 ON EACH ASSEMBLY SUPPLIED TO THIS SPECIFICATION.

6.2.2 A VISUAL AND MECHANICAL INSPECTION SHALL BE PERFORMED TO ENSURE THAT THE ASSEMBLY CONFORMS TO DIMENSIONAL, MARKING, SURFACE FINISH, CONNECTOR MATING, AND WEIGHT REQUIREMENTS.

6.2.3 THE SUPPLIER SHALL MEASURE AND RECORD THE ELECTRICAL PERFORMANCE CHARACTERISTICS OF EACH ITEM FURNISHED TO THIS SPECIFICATION IN ACCORDANCE WITH THE ACCEPTANCE TEST SAMPLING PLAN DESCRIBED IN PARAGRAPH 6.2.4. UNLESS OTHERWISE SPECIFIED TESTS SHALL BE PERFORMED AT AN AMBIENT TEMPERATURE OF 25°C $\pm$ 5°C WITH POWER SUPPLY VOLTAGES AS SPECIFIED IN TABLE III.

6.2.4 THE FIRST TEN (10) DELIVERABLE UNITS OF ANY DASH NUMBER SHALL BE SUBJECTED TO BOTH GROUP A AND GROUP B TESTS DESCRIBED BELOW. ALL OF THE REMAINING DELIVERABLE UNITS OF A GIVEN DASH NUMBER SHALL BE SUBJECTED TO GROUP A TESTS. TWO PERCENT (2%) OF ALL THE REMAINING DELIVERABLE UNITS OF A GIVEN DASH NUMBER SHALL BE SUBJECTED TO GROUP B TESTS. IF A SAMPLE FAILS TO MEET ANY OF THE REQUIREMENTS OF THE GROUP B TESTS, FIVE (5) ADDITIONAL UNITS OF THAT PART NUMBER FROM THE SAME PRODUCTION LOT SHALL BE TESTED FOR THE FAILED PARAMETER. ANY FAILURE IN THE ADDITIONAL FIVE (5) TESTED UNITS SHALL REQUIRE A FAILURE ANALYSIS AND CORRECTIVE ACTION REPORT.

6.2.4 CONTINUED

GROUP A TESTS

A) INSERTION LOSS MEASURED CONTINUOUSLY OVER THE SPECIFIED FREQUENCY RANGE PER PARAGRAPH 3.2.

B) VSWR OR RETURN LOSS AT J1 AND J2 MEASURED CONTINUOUSLY OVER THE SPECIFIED FREQUENCY RANGE WITH THE SWITCH "ON" (LOW LOSS STATE) PER PARAGRAPH 3.5.

C) VSWR OR RETURN OF LOSS AT J1 MEASURED CONTINUOUSLY OVER THE SPECIFIED FREQUENCY RANGE WITH THE SWITCH "OFF" (HIGH LOSS STATE) PER PARAGRAPH 3.6.

D) ISOLATION MEASURED CONTINUOUSLY OVER THE SPECIFIED FREQUENCY RANGE PER PARAGRAPH 3.4

E) THE OUTPUT 1dB COMPRESSION POINT SHALL BE MEASURED AT FE FOR -1 AND -2 UNITS AND AT Fk FOR -3 AND -4 UNITS PER PARAGRAPH 3.7.

F) THE AMPLITUDE OF ANY SPURIOUS SIGNALS SHALL BE MEASURED PER PARAGRAPH 3.15.

GROUP B TESTS

G) HARD LIMITING WITH AN INPUT PULSE OF +50dBm, 5 MICROSECOND PULSE WIDTH, ONE PERCENT DUTY CYCLE, AND 100 NANOSECOND RISE TIME (10% TO 90% OF THE DETECTED VOLTAGE ENVELOPE) PER PARAGRAPH 3.8.

H) SPIKE LEAKAGE (ENERGY AND PULSE WIDTH) WITH AN RF INPUT PULSE AS DESCRIBED IN (G) ABOVE PER PARGRAPH 3.9.

I) RECOVERY TIME PER PARAGRAPH 3.17.

J) SWITCHING TIMES DEFINED IN FIGURE 5 PER PARAGRAPHS 3.11.1 THROUGH 3.11.3.

K) CONTROL INPUT CURRENTS PER PARAGRAPH 3.12.

L) DC CURRENTS WITH THE SWITCH IN EACH LOGIC STATE PER PARAGRAPH 3.18.

M) INSERTION LOSS MEASURED CONTINUOUSLY OVER THE SPECIFIED FREQUENCY RANGE AT -28°C AND +72°C PER PARAGRAPH 3.2.

6.2.5 THE SUPPLIER SHALL FURNISH A COPY OF THE ACCEPTANCE TEST DATA FOR EACH ITEM SUPPLIED TO THIS SPECIFICATION. DATA SHALL INCLUDE ACTUAL MEASURED VALUES AND FREQUENCY PLOTS, WHERE APPLICABLE.

6.3 MANUFACTURING SCREENING PROGRAM. EACH UNIT DELIVERED TO RESD SHALL COMPLY WITH THE REQUIREMENTS OF NAVMAT P-9492 FOR A MANUFACTURING SCREENING PROGRAM (MSP). THE FOLLOWING DETAILS SHALL APPLY TO THE MSP:

A. THE SCREENING TESTS SHALL BE PERFORMED AT AND BY RESD.

B. ANY UNIT THAT FAILS DURING SCREENING SHALL BE RETURNED TO THE SUPPLIER FOR FAILURE ANALYSIS, CORRECTIVE ACTION, AND REPAIR AS SPECIFIED IN THE CONTRACT OR STATEMENT OF WORK.

C. THE MSP SHALL CONSIST OF TEMPERATURE CYCLING AND VIBRATION TESTS. SEE PARA. 6.3.1 AND 6.3.2.

D. THE SCREENING TESTS MAY BE CONDUCTED IN ANY SEQUENCE.

E. VISUAL EXAMINATION AND ELECTRICAL MEASUREMENTS SHALL BE MADE BEFORE, DURING, AND AFTER TESTS OF THE MSP.

6.3.1 TEMPERATURE CYCLING. THE FOLLOWING DETAILS SHALL APPLY TO THE TEMPERATURE CYCLING PORTION OF THE MANUFACTURING SCREENING PROGRAM:

A. THE TEMPERATURE EXTREMES SHALL BE –45°C AND +75°C, AMBIENT AIR TEMPERATURE.
B. THE RATE OF TEMPERATURE CHANGE SHALL BE 5°C PER MINUTE, MINIMUM.
C. THE DWELL TIME AT EACH TEMPERATURE EXTREME SHALL BE SUFFICIENT TO ASSURE TEMPERATURE STABILIZATION WITHIN THE UNIT.
D. THE NUMBER OF TEMPERATURE CYCLES SHALL BE TEN, MINIMUM. THE TEMPERATURE SEQUENCE FROM ROOM TEMPERATURE TO –45°C TO +75°C AND BACK TO ROOM TEMPERATURE IS DEFINED AS ONE CYCLE.
E. THE UNIT SHALL BE OPERATING AT AMBIENT TEMPERATURES FROM -28°C TO +50°C DURING THE TRANSITIONS FROM LOW TO HIGH TEMPERATURE. POWER SHALL BE OFF AT TEMPERATURES ABOVE +50°C AND BELOW –28°C, AND DURING THE HIGH-TO-LOW TEMPERATURE TRANSITIONS.

6.3.2 SCREENING VIBRATION. THE FOLLOWING DETAILS SHALL APPLY TO THE VIBRATION PORTION OF THE MANUFACTURING SCREENING PROGRAM:

A. THE VIBRATION SPECTRUM AND POWER SPECTRAL DENSITY SHALL BE .04 g^2/HZ FROM 100 TO 350 HZ WITH ROLLOFF OF 3 dB/OCTAVE FROM 100 TO 20 HZ AND 350 TO 2000 HZ.
B. THE DURATION OF VIBRATION SHALL BE TEN MINUTES, MINIMUM.
C. THE AXIS OF VIBRATION SHALL BE PERPENDICULAR TO THE MAJOR MOUNTING SURFACE OF THE UNIT.
D. THE UNIT SHALL BE OPERATING DURING THIS TEST.

7. MARKING REQUIREMENTS.

7.1 THE UNITS SHALL BE MARKED ON BOTH SIDES, OR, AT THE VENDOR'S OPTION, ON ONLY THE COVER SIDES OF 929050-1 AND 929050-3 AND ONLY THE HOUSING SIDE OF 929050-2; MARKING IS REQUIRED ON BOTH SIDES OF 929050-4 IN ACCORDANCE WITH MIL-STD-1285 WITH THE FOLLOWING INFORMATION.

A. MANUFACTURER'S NAME, TRADEMARK, OR CAGE CODE ENCLOSED IN PARENTHESES.
B. MANUFACTURER'S PART NUMBER ENCLOSED IN PARENTHESES.

7.1 CONTINUED

C. SERIAL NUMBER

D. RAYTHEON CAGE CODE, CONTROL NUMBER, AND REVISION LETTER; FOR EXAMPLE, 49956-929050 - [ ] REV [ ].

E. CONNECTOR REFERENCE DESIGNATIONS AND TERMINAL IDENTIFICATION AS SHOWN IN FIGURE 7.

F. THE SENSITIVE ELECTRONIC DEVICE SYMBOL.

8. SPECIAL REQUIREMENTS.

8.1 THE DEVICE SHALL HAVE A USEFUL LIFE OF 15 YEARS WHEN EXPOSED TO THE ENVIRONMENTAL CONDITIONS LISTED IN TABLE IV. THE DEVICE SHALL HAVE AN OPERATIONAL LIFE OF 92,000 HOURS WHICH MAY BE ACCUMULATED RANDOMLY DURING THE 15 YEARS.

8.2 THE DEVICE SHALL HAVE A FAILURE RATE OF NO MORE THAN 5 FAILURES PER MILLION HOURS OF ACCUMULATED OPERATING TIME (MTBF $\geq$ 200,000 HOURS) WHEN OPERATED UNDER THE ENVIRONMENTAL CONDITIONS LISTED IN TABLE IV.

9. PREPARATION FOR DELIVERY.

9.1 PACKAGING, PACKING, AND MARKING FOR SHIPMENT SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF MIL-E-17555 FOR LEVEL C PRESERVATION AND PACKAGING, AND LEVEL C PACKING. PACKAGING AND MARKING OF SENSITIVE ELECTRONIC DEVICES SHALL BE IN ACCORDANCE WITH PARAGRAPH 3.11.10 OF MIL-E-17555.

10. DRAWING REQUIREMENTS.

10.1 THIS DRAWING HAS BEEN PREPARED IN ACCORDANCE WITH MIL-STD-100A.

10.2 THE RAYTHEON ESD CONTROL NUMBER FOR THE ITEMS SPECIFIED HEREIN SHALL BE AS SPECIFIED IN TABLE I. DATA INDICATED IN THE PARTS LIST IS APPLICABLE TO ALL ITEMS SHOWN IN TABLE I.

11. ONLY THE ITEMS DESCRIBED ON THIS DRAWING WHEN PROCURED FROM THE VENDORS LISTED HEREON ARE APPROVED BY RAYTHEON COMPANY, ELECTROMAGNETIC SYSTEMS DIVISION, 6380 HOLLISTER AVENUE, GOLETA, CA 93117, FOR USE IN THE APPLICATIONS SPECIFIED HEREON. A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR APPROVAL BY RAYTHEON ESD OR THE PROCURING ACTIVITY.

APPROVED SOURCE(S) OF SUPPLY.

M/A - COM
MICROWAVE CIRCUITS, INC.
SOUTH AVENUE
NORTHWEST INDUSTRIAL PARK
BURLINGTON, MA 01803

CAGE CODE: 96341
PART NUMBER: SEE TABLE IV

RAYTHEON COMPANY
ELECTROMAGNETIC SYSTEMS DIVISION
6380 HOLLISTER AVENUE
GOLETA, CA 93117

CAGE CODE: 49956
PART NUMBER: SEE TABLE IV

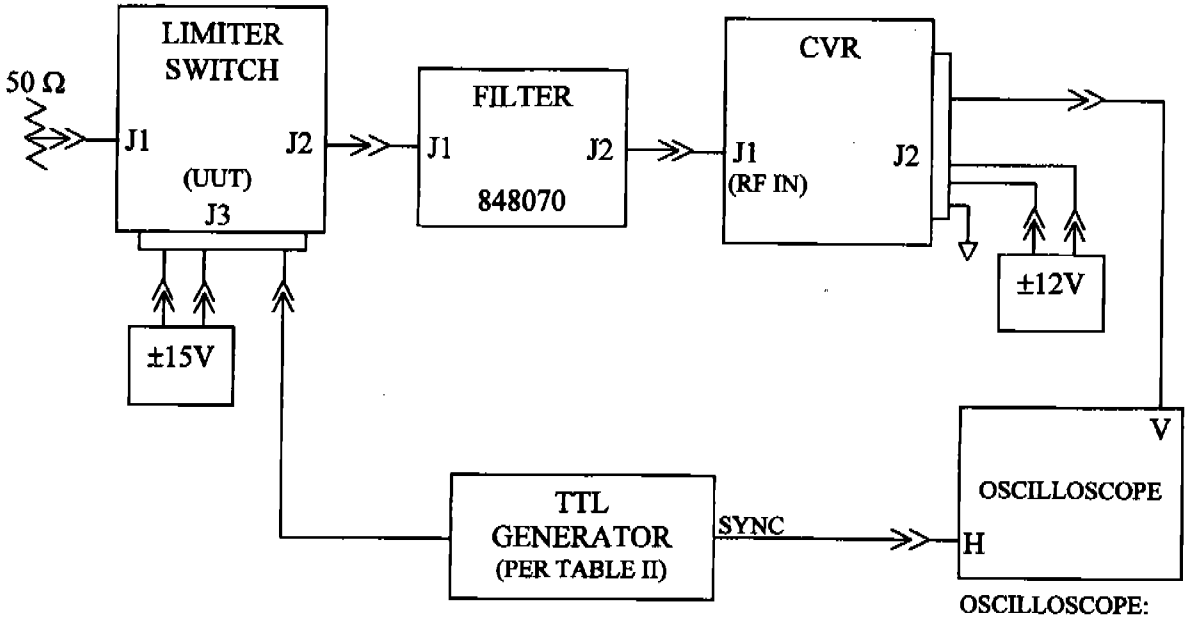
MICRO-DYNAMICS, INC.
10 SONAR DRIVE
WOBURN, MA 01801

CAGE CODE: 32187
PART NUMBER: SEE TABLE IV

IDENTIFICATION OF THE APPROVED SOURCE(S) OF SUPPLY HEREON IS NOT TO BE CONSTRUED AS A GUARANTEE OF PRESENT OR CONTINUED AVAILABILITY AS A SOURCE OF SUPPLY FOR THE ITEM(S) DESCRIBED ON THE DRAWING.

TABLE IV - PART NUMBERS

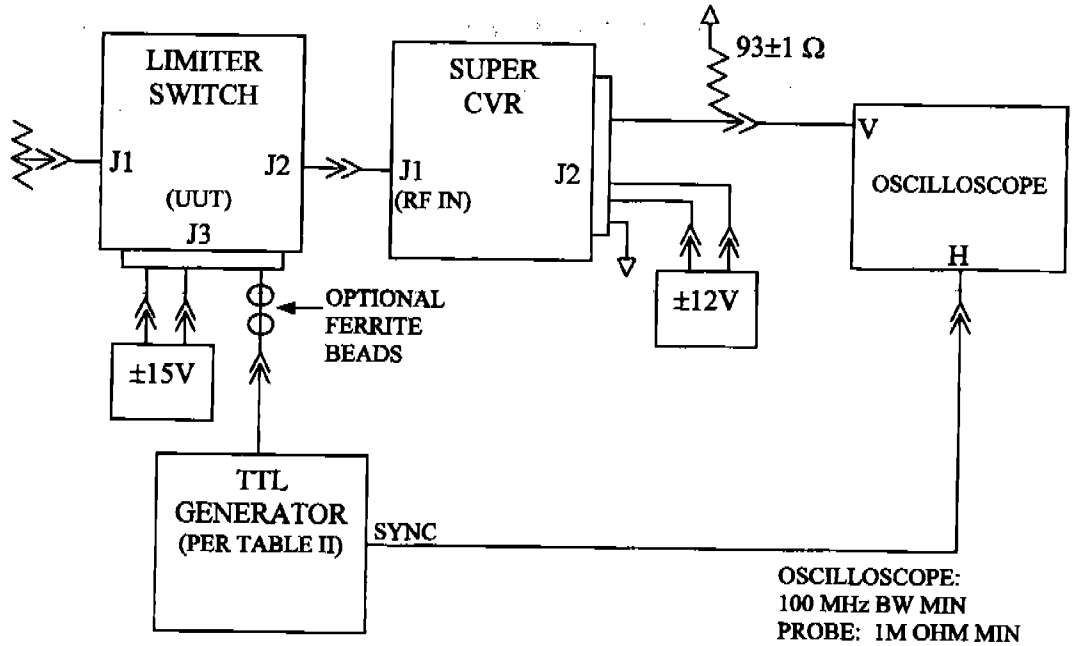
RAYTHEON CONTROL NO.	SUPPLIER'S PART NUMBER		
	M/A COM	RAYTHEON ESD	MICRO-DYNAMICS
929050-1	8438-S182	G274448-1	MD-160C2 OR MD-160C002-1
929050-2	8438-S183	G274448-2	MD-160C3
929050-3	8438-S184	G274448-3	MD-160K5 OR MD-160K005-1
929050-4	8438-S185	G274448-4	



CVR J2 PIN ASSIGNMENTS:

PIN A, -12Vdc
PIN C, GROUND
PIN E, +12Vdc
PIN F, GROUND
PIN K, VIDEO OUT

FIGURE 9. TEST SET UP
(PARAGRAPH 3.15)



SUPER CVR J3 PIN ASSIGNMENTS:

PIN A, -12Vdc
PIN C, GROUND
PIN E, +12Vdc
PIN H, GROUND
PIN K, VIDEO OUT

NOTE: PINS B, D, F AND J ARE TEST POINTS. LEAVE OPEN AT CONNECTOR.

FIGURE 10. TEST SET UP
(PARAGRAPH 3.15)

DEPARTMENT OF DEFENSE

CONTRACT SECURITY CLASSIFICATION SPECIFICATION

(The requirements of the DoD Industrial Security Manual apply to all security aspects of this effort.)

1. CLEARANCE AND SAFEGUARDING

a. FACILITY CLEARANCE REQUIRED
Confidential

b. LEVEL OF SAFEGUARDING REQUIRED
Confidential

2. THIS SPECIFICATION IS FOR: (x and complete as applicable)

☐	a. PRIME CONTRACT NUMBER	
☐	b. SUBCONTRACT NUMBER	
☒	c. SOLICITATION OR OTHER NUMBER [illegible]	DUE DATE (YYMMDD) [illegible]

3. THIS SPECIFICATION IS: (x and complete as applicable)

☒	a. ORIGINAL (Complete date in all cases)		DATE (YYMMDD) [illegible]
☐	b. REVISED (Supersedes all previous specs)	Revision No.	DATE (YYMMDD)
☐	c. FINAL (Complete Item 5 in all cases)		DATE (YYMMDD) [illegible]

4. THIS IS A FOLLOW-ON CONTRACT? ☐ YES ☒ NO. If Yes, complete the following:

Classified material received or generated under ______ (Preceding Contract Number) is transferred to this follow-on contract.

5. IS THIS A FINAL DD FORM 254? ☐ YES ☐ NO. If Yes, complete the following:

In response to the contractor's request dated ______, retention of the identified classified material is authorized for the period of ______

6. CONTRACTOR (Include Commercial and Government Entity (CAGE) Code)

a. NAME, ADDRESS, AND ZIP CODE	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE (Name, Address, and Zip Code)

7. SUBCONTRACTOR

a. NAME, ADDRESS, AND ZIP CODE	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE (Name, Address, and Zip Code)

8. ACTUAL PERFORMANCE

a. LOCATION	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE (Name, Address, and Zip Code)

9. GENERAL IDENTIFICATION OF THIS PROCUREMENT

To purchase Limiter Switches Part Number 929050-1

10. THIS CONTRACT WILL REQUIRE ACCESS TO:	YES	NO
a. COMMUNICATIONS SECURITY (COMSEC) INFORMATION	☐	☒
b. RESTRICTED DATA	☐	☒
c. CRITICAL NUCLEAR WEAPON DESIGN INFORMATION	☐	☒
d. FORMERLY RESTRICTED DATA	☐	☒
e. INTELLIGENCE INFORMATION:	☐	☒
(1) Sensitive Compartmented Information (SCI)	☐	☐
(2) Non-SCI	☐	☐
f. SPECIAL ACCESS INFORMATION	☐	☒
g. NATO INFORMATION	☐	☒
h. FOREIGN GOVERNMENT INFORMATION	☐	☒
i. LIMITED DISSEMINATION INFORMATION	☐	☒
j. FOR OFFICIAL USE ONLY INFORMATION	☐	☒
k. OTHER (Specify)	☐	☒

11. IN PERFORMING THIS CONTRACT, THE CONTRACTOR WILL:	YES	NO
a. HAVE ACCESS TO CLASSIFIED INFORMATION ONLY AT ANOTHER CONTRACTOR'S FACILITY OR A GOVERNMENT ACTIVITY	☐	☒
b. RECEIVE CLASSIFIED DOCUMENTS ONLY	☒	☐
c. RECEIVE AND GENERATE CLASSIFIED MATERIAL	☐	☒
d. FABRICATE, MODIFY, OR STORE CLASSIFIED HARDWARE	☐	☒
e. PERFORM SERVICES ONLY	☐	☒
f. HAVE ACCESS TO U.S. CLASSIFIED INFORMATION OUTSIDE THE U.S., PUERTO RICO, U.S. POSSESSIONS AND TRUST TERRITORIES	☐	☒
g. BE AUTHORIZED TO USE THE SERVICES OF DEFENSE TECHNICAL INFORMATION CENTER (DTIC) OR OTHER SECONDARY DISTRIBUTION CENTER	☐	☒
h. REQUIRE A COMSEC ACCOUNT	☐	☒
i. HAVE TEMPEST REQUIREMENTS	☐	☒
j. HAVE OPERATIONS SECURITY (OPSEC) REQUIREMENTS	☐	☒
k. BE AUTHORIZED TO USE THE DEFENSE COURIER SERVICE	☐	☒
l. OTHER (Specify)	☐	☒

12. PUBLIC RELEASE. Any information (classified or unclassified) pertaining to this contract shall not be released for public dissemination except as provided by the NISPOM or unless it has been approved for public release by appropriate U.S. Government authority. Proposed public releases shall be submitted for approval prior to release

☐ Direct ☒ Through (Specify):

to the Directorate for Freedom of Information and Security Review, Office of the Assistant Secretary of Defense (Public Affairs)* for review.
*In the case of non-DoD User Agencies, requests for disclosure shall be submitted to that agency.

13. SECURITY GUIDANCE. The security classification guidance needed for this classified effort is identified below. If any difficulty is encountered in applying this guidance or if any other contributing factor indicates a need for changes in this guidance, the contractor is authorized and encouraged to provide recommended changes; to challenge the guidance or the classification assigned to any information or material furnished or generated under this contract; and to submit any questions for interpretation of this guidance to the official identified below. Pending final decision, the information involved shall be handled and protected at the highest level of classification assigned or recommended. (Fill in as appropriate for the classified effort. Attach, or forward under separate correspondence, any documents/guides/extracts referenced herein. Add additional pages as needed to provide complete guidance.)

The classification markings shown on the documents received will provide the classification guidance necessary. Any Classified information generated in the performance of this contract shall be classified according to the markings shown on material. OPNAV INSTRUCTION 5513.8B ENCLOSURE 38

14. ADDITIONAL SECURITY REQUIREMENTS. Requirements, in addition to NISPOM requirements, are established for this contract. (If Yes, identify the pertinent contractual clauses in the contract document itself, or provide an appropriate statement which identifies the additional requirements. Provide a copy of the requirements to the cognizant security office. Use Item 13 if additional space is needed.) ☐ Yes ☒ No

15. INSPECTIONS. Elements of this contract are outside the inspection responsibility of the cognizant security office. (If Yes, explain and identify specific areas or elements carved out and the activity responsible for inspections. Use Item 13 if additional space is needed.) ☐ Yes ☒ No

16. CERTIFICATION AND SIGNATURE. Security requirements stated herein are complete and adequate for safeguarding the classified information to be released or generated under this classified effort. All questions shall be referred to the official named below.

a. TYPED NAME OF CERTIFYING OFFICIAL	b. TITLE	c. TELEPHONE (Include Area Code)
VICKIE LONG	CONTRACTING OFFICER'S SECURITY REPRESENTATIVE	812-854-3514

d. ADDRESS (Include Zip Code)
COMMANDER, BLDG 10, CODE R82
300 HIGHWAY 361
CRANE, IN 47522-5001

e. SIGNATURE

17. REQUIRED DISTRIBUTION
- ☒ a. CONTRACTOR
- ☐ b. SUBCONTRACTOR
- ☒ c. COGNIZANT SECURITY OFFICE FOR PRIME AND SUBCONTRACTOR
- ☐ d. U.S. ACTIVITY RESPONSIBLE FOR OVERSEAS SECURITY ADMINISTRATION
- ☑ e. ADMINISTRATIVE CONTRACTING OFFICER
- ☐ f. OTHERS AS NECESSARY

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